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Defense Information Infrastructure (DII)

Common Operating Environment (COE)

Version 3.2.0.0

Developer's Toolkit Version 3.2.0.1 Installation Guide

(Solaris 2.5.1)

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Preface

The following conventions have been used in this document:

[HELVETICA FONT]	Used to indicate keys to be pressed. For example, press [RETURN].
`Courier Font`	Used to indicate entries to be typed at the keyboard, operating system commands, titles of windows and dialog boxes, file and directory names, and screen text. For example, type the following command at the prompt: `tar xvfp /dev/nrtape`
Italics	Used for emphasis.

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1. Introduction

1.1 Overview

Defense Information Infrastructure (DII) Common Operating Environment (COE) developer's tools were developed to aid the developer in the creation and ultimate installation of DII COE segments. The tools make software integration a largely automated process, thus significantly reducing development time while automatically allowing detection of potential integration and runtime problem areas.

By default, developer's tools are located underneath the `DII_DEV` directory and are distributed as part of the Developer's Toolkit. The actual location of the Developer's Toolkit may vary from system to system because it is installed by means of a `tar` command. For example, if the toolkit is tarred to `/h`, the path would be `/h/DII_DEV`.

The DII COE Version 3.2.0.0 Developer's Toolkit Version 3.2.0.1 consists of the following items:

- 11 developer tools (CalcSpace, CanInstall, ConfigDef, ConvertSeg, MakeAttribs, MakeInstall, TestInstall, TestRemove, TimeStamp, VerifySeg, and VerUpdate)
- `include` files, located in the `include` directory
- public Application Programmer Interface (API) libraries, located in the `libs` directory
- a data file called `TapeSizes`, located in the `data` directory, which contains a list of known tape devices
- an environment setup script called `MakeTOOLSEnv`, located in the `Scripts` directory
- public API examples, located in the `examples` directory; and (7) sample segments, located in the `SampleSegments` directory.

The DII COE Version 3.2.0.0 Developer's Toolkit Version 3.2.0.1 encompasses the following changes:

- The tool ConfigDef has been added to support distributions. Distributions simplify the installation procedure by allowing the user to install logically grouped segments known as bundles or configurations.
- Several tools and APIs have been modified to support Helper Functions. Helper Functions allow the DII COE tools to be extensible to accommodate new technologies. For information on how to create and use helper functions, refer to the *DII COE Version 3.2.0.0 Programmer's Manual for Helper Function*.

- The COE_Is_Permitted API is now supported to allow an application to determine what permissions a particular user has for running the current application.

The following developer's tools have been enhanced to support Helper Functions:

- CanInstall
- MakeInstall
- TestInstall
- TestRemove
- VerifySeg.

The following APIs, as described in the *DII COE Version 3.2.0.0 Programmer's Manual for Helper Function*, have been added to support Helper Functions:

- COEHFWarningLog
- COEHFErrorLog
- COEHFDebugLog
- COEHFVerboseLog
- COEHFInstallerLog.

Developer's Tools

The developer's tools can be run from the command line, and some can be run from other code using published APIs. The following tools are included in the DII COE Version 3.2.0.0 Developer's Toolkit Version 3.2.0.1 delivery. The *DII COE Version 3.2.0.0 Programmer's Manual for Kernel Version 3.2.0.0 Patch 1 and Developer's Toolkit Version 3.2.0.1 (Solaris 2.5.1)* describes these tools and their functionality in more detail.

- **CalcSpace** Version 1.0.0.6—Computes the space required for the segment specified and updates the hardware descriptor.
- **CanInstall** Version 1.0.0.9—Tests a segment to see if it can be installed, which means that all required segments must already be on the disk, and the disk cannot have any conflicting segments.
- **ConfigDef** Version 1.0.0.0—Creates a distribution definition from a list of segments.

- **ConvertSeg** Version 1.0.0.9—Examines a segment's segment descriptors and converts them to the *DII COE Integration and Runtime Specification* segment format. Refer to the *DII COE Integration and Runtime Specification Version 2.0*, for more information about the DII COE segment format.

- **MakeAttribs** Version 1.0.0.9—Creates the descriptor file `FileAttribs`, which recursively traverses every subdirectory beneath the segment home directory and creates a file with lines in the proper format.

- **MakeInstall** Version 1.0.1.8—Writes one or more segments to an installation medium or packages the segments for distribution over the network.

- **TestInstall** Version 1.0.0.11—Installs a segment (temporarily) that already resides on disk.

- **TestRemove** Version 1.0.0.10—Removes a segment that was installed by TestInstall.

- **TimeStamp** Version 1.0.0.8—Puts the current time and date into the `VERSION` descriptor of the specified segment.

- **VerifySeg** Version 1.0.0.11—Validates that a segment conforms to the rules for defining a segment.

- **VerUpdate** Version 1.0.1.7—Increments the segment version number and updates the date and time in the `VERSION` descriptor of the specified segment.

`MakeTOOLSEnv` Setup Script

The `MakeTOOLSEnv` setup script is located in the `DII_DEV/Scripts` directory. The script defines the environment variables required for developer's tools processing.

`TapeSizes` Data File

The `TapeSizes` data file is located in the `DII_DEV/data` directory. The data file contains a list of known tape devices. This is used as a convenience feature with the MakeInstall tool.

> **NOTE**: The environment variable `TOOLS_DATA` must be set and pointing to `DII_DEV/data` to allow MakeInstall to access this file.

`examples` Directory

The `examples` directory contains a list of example C programming files that show developers how to use the public APIs. The required public `include` files are also shown. Examples are located in the `DII_DEV/examples` directory.

`include` Directory
Public `include` files are used to compile with the public APIs. Public `include` files are located in the `DII_DEV/include` directory.

`libs` Directory
Public API libraries are located in the `DII_DEV/libs` directory.

1.2 Installation Preparation

You must answer the following questions before you install the DII COE Developer's Toolkit. Your system administrator should provide you with the appropriate answers.

1. Does the system have an internal tape drive? If so, what is the tape device number?

2. Is an external tape drive attached to the system? If so, what is the tape device number?

1.3 Developer's Toolkit Component

One 8mm tape consisting of a relative tar of the Developer's Toolkit, Version 3.2.0.1 (Solaris 2.5.1).

1.4 Referenced Documents

The following documents are referenced in this installation guide:

- DII.3200.HPSOL.Helper.PM-1, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Version 3.2.0.0 Programmer's Manual for Helper Function* (HP-UX 10.20/Solaris 2.5.1), September 26, 1997

- DII.3200.Sol251.PM-1, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Programmer's Manual for Kernel Version 3.2.0.0 Patch 1 and Developer's Toolkit Version 3.2.0.1 (Solaris 2.5.1),* September 26, 1997

- DII COE I&RTS:Rev 2.0, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Integration and Runtime Specification (I&RTS*) *Version 2.0,* October 23, 1995

- DII COE I&RTS:Rev 3.0, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Integration and Runtime Specification (I&RTS*) *Version 3.0,* July 1997

- DII.3200.Sol251.KernelP1.AG-1, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Version 3.2.0.0 System Administrator's Guide for the Kernel Patch 1 (Solaris 2.5.1),* September 26, 1997.

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2. Developer's Toolkit Installation

Follow the steps below to install the DII COE Developer's Toolkit.

NOTE: By default, the Developer's Toolkit is located under the `DII_DEV` directory. However, developers may install the Developer's Toolkit on the disk in any directory they desire. For example, if the toolkit is tarred to `/h`, the path would be `/h/DII_DEV`.

NOTE: Installing the Developer's Toolkit takes 2-3 minutes.

STEP 1: **Log in as `root`**. Type `root` at the name prompt and press [RETURN].

STEP 2: **Enter the `root` password**. Type the `root` password at the password prompt and press [RETURN]. The Common Desktop Environment (CDE) Front Panel appears at the bottom of the screen. Refer to the *DII COE System Administrator's Guide (Solaris 2.5.1)* for more information about CDE.

STEP 3: **Open a terminal emulator window**. Click on the Text Editor—Personal Applications control subpanel and then click on the Terminal control. A terminal emulator window appears.

STEP 4: **Move to the directory where you want to install the Developer's Toolkit**. Type the following command at the prompt to move to the `/h` directory or to another directory of your choice:

```
cd [directory of your choice][RETURN]
```

STEP 5: **Install the Developer's Toolkit**. Type the following command if the tape drive is attached to the system, where X is the tape drive number:

```
tar xvf /dev/rmt/Xmn [RETURN]
```

Type the following command if the tape drive is attached to another system, where `Y` is the remote host's IP address, and X is the tape drive number:

```
rsh Y dd if=/dev/rmt/Xmn bs=20b | tar xvfB -[RETURN]
```

The Developer's Toolkit installs at this time, and the installation process is then complete.

After the `tar` command is performed, all of the components of the Developer's Toolkit will reside in the `DII_DEV` directory. The Developer's Toolkit components are listed below:

executables	`DII_DEV/bin`
public header files	`DII_DEV/include`
public libraries	`DII_DEV/libs`
data files	`DII_DEV/data`
manual pages	`DII_DEV/man`
scripts	`DII_DEV/Scripts`
examples	`DII_DEV/examples`
sample segments	`DII_DEV/SampleSegments`

Figure 1. Developer's Toolkit Components

Developers should include `DII_DEV/bin` in the path environment variable for their development environment. The `DII_DEV/man` directory should also be included in the search path for UNIX manual pages. Developers must source the `MakeTOOLSEnv` setup script. This will set up the following four environment variables: `MACHINE`, `MACHINE_CPU`, `MACHINE_OS`, and `TOOLS_HOME`. Read the `README` file at the top level of the `DII_DEV` directory for more information about these environment variables.

Developers are encouraged to submit tools to the COE community for inclusion in the Developer's Toolkit. All tools submitted must be license and royalty free and must include a manual page for on-line documentation. Developers who want to release source code for their contributed tools may do so, and the source code for each tool will be organized under the `DII_DEV/src` directory.

Refer to the *DII COE Integration and Runtime Specification Version 3.0,* for a more detailed explanation of the development environment.